

CLAIMS

What is claimed is:

1. A method for using an RF tag, comprising the steps of;
transmitting a first data set to a tag at a first frequency, and
transmitting second data set to the tag at a second frequency.
2. The method of claim 1, wherein;
the first data set comprises;
a command for writing data, and
data for storing in the tag.
3. The method of claim 1, wherein;
the second data set comprises;
a command for reading data from the tag.
4. The method of claim 3, further comprising the step of;
reading data from the tag at the second frequency.
5. The method of claim 1, wherein;
the first instance of transmitting data and the second instance of
transmitting data occur a separate locations.

6. An RF tag programmer, comprising;
a digital controller,
a radio frequency source controlled by the digital controller,
a modulator controlled by the digital controller for modulating radio
5 frequency energy generated by the radio frequency source, and
an antenna coupled to the output of the modulator for transmitting
modulated radio frequency energy to an RF tag, whereby;
the RF tag programmer may transmit modulated radio frequency
energy at a plurality of radio frequencies.

10 7. The RF tag programmer of claim 6, wherein;
the RF source is tunable to a plurality of radio frequencies.

15 8. The RF tag programmer of claim 6, wherein;
the RF source comprises a plurality of RF sources.

9. The RF tag programmer of claim 8, further comprising;
a plurality of modulators coupled to the plurality of RF sources.

20 10. The RF tag programmer of claim 9, wherein;
at least one of a set comprising a coupled RF source and modulator
is installable as a module.

25 11. The RF tag programmer of claim 6, further comprising;
a printer for producing printed indicia on the RF tag.

12. An RF tag, comprising;
a first digital controller,
a first radio frequency communication module coupled to the digital
controller, and
5 a first antenna coupled to the radio frequency communication
module,
whereby the RF tag may receive data at a plurality of radio
frequencies.

10 13. The RF tag of claim 12, wherein;
the digital controller and the radio frequency communication module
are formed on a common silicon die.

14. The RF tag of claim 12, wherein;
15 the RF tag is a passive RF tag.

16. The RF tag of claim 12, further comprising;
a label substrate for receiving printing,
the substrate also providing a surface for mounting the digital
20 controller, the radio frequency communication module, and the antenna.

16. The RF tag of claim 12, further comprising;
a second radio frequency communication module coupled to the first
digital controller, and
25 a second antenna coupled to the second radio frequency
communication module.

17. The RF tag of claim 12, further comprising;
a second digital controller,
a second radio frequency communication module coupled to the
second digital controller, and
5 a second antenna coupled to the second radio frequency
communication module.

18. The RF tag of claim 12, wherein;
the antenna comprises;
10 a first section responsive to magnetic coupling, and
a second section responsive to carrier wave coupling.

19. The RF tag of claim 12, wherein;
the antenna comprises;
15 a first section responsive to near field coupling, and
a second section responsive to far field coupling.

20. The RF tag of claim 12, wherein;
the antenna comprises;
20 a data transmission element, and
a programming stub.

21. The RF tag of claim 12, wherein;
the antenna comprises;
25 a first element responsive to a first frequency, and
a second element responsive to a second frequency.

22. The RF tag of claim 21, further comprising
a conversion circuit coupled between the first antenna element and
the second antenna element, whereby;
the conversion circuit converts the second frequency to the first
frequency.

23. An apparatus for printing and programming intelligent labels,
comprising;
a print engine having a media path, and
an RF tag programmer mounted thereto,
whereby media comprising intelligent labels may be programmed
and printed with indicia, and wherein;
the RF tag programmer is capable of transmitting RF energy at a
plurality of frequencies.

24. The apparatus of claim 23, wherein;
the print engine is a thermal transfer print engine.

25. The apparatus of claim 23, wherein;
the print engine is a flexographic printing press.

26. The apparatus of claim 23, further comprising;
a media supply for holding a length of intelligent labels prior to
printing.

27. A method for writing data to RF tags, comprising;
programming one or more of a first set of RF tags in a programmer,
removing a media supply of the first set of RF tags from the
programmer,

5 installing a second set of RF tags in the programmer, and
programming at least one of the second set of RF tags, wherein;
the first set and second set of RF tags use different communication
interfaces.

10 28. The method of claim 27, wherein;
the first set of RF tags uses a first communication protocol, and
the second set of RF tags uses a second communication protocol.

15 29. The method of claim 27, wherein;
the first set of RF tags uses a first communication frequency, and
the second set of RF tags uses a second communication frequency.

30. The method of claim 27, further comprising;
printing indicia on a surface of said first one or more RF tags with a
20 print engine.

31. The method of claim 30, wherein;
the print engine comprises a thermal print engine.

25 32. The method of claim 30, wherein;
the print engine comprises a flexographic printing press.

33. The method of claim 27, wherein;
switching the programmer from the first communication interface to
the second communication interface happens substantially without overt user
intervention.

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